

Claims

What is claimed is:

- 1) A fluid control apparatus comprising:
 - a) a fluid conveyance; and
 - 5 b) a valve positioned in the conveyance, wherein the valve includes a flexible portion secured to receive fluid from an upper containment to cause the valve to restrict the flow of fluid through the conveyance.
- 2) The apparatus of claim 1 wherein the valve includes at least one upper opening to receive fluid from the fluid containment above the flexible portion.
- 10 3) The apparatus of claim 2 wherein the flexible portion is a bladder and the valve includes one more orifices in an upper plate secured to the top of the bladder.
- 4) The apparatus of claim 3 further comprising a float-operated valve that automatically maintains a preset fluid level in the containment.
- 15 5) The apparatus of claim 2 further comprising a float-operated valve that automatically maintains a preset fluid level in the containment.
- 6) The apparatus of claim 5 wherein the preset fluid level is determined from the liquid height of a fluid storage point upstream from the valve in the conveyance and wherein said storage point provides fluid to the conveyance.
- 20 7) The apparatus of claim 6 further comprising a fixed orifice between the flexible portion and the conveyance, wherein the orifice permits a constant volume of water to flow through the conveyance when the valve is expanded.

- 8) The apparatus of claim 3 further comprising a fixed orifice between the bladder and the conveyance, wherein the orifice permits a constant volume of fluid to flow through the conveyance when the valve is expanded.
- 9) The apparatus of claim 8 wherein the fixed orifice is a vortexing orifice.
- 5 10) The apparatus of claim 2 wherein the valve includes material selected from the group consisting of chlorosulfonated polyethylene, polyvinyl chloride, rubber, polypropylene, polyethylene, vinyl, neoprene, polyurethane and woven and non-woven fabrics.
- 10 11) The apparatus of claim 1 further comprising a fixed orifice between the valve and the conveyance, wherein the orifice permits a constant volume of water to flow through the conveyance when the valve is expanded.
- 12) A fluid control apparatus comprising a flexible membrane positioned in a fluid conveyance wherein flow of fluid outside the membrane and through the conveyance is controlled by top to down hydrostatic pressure of a fluid within the membrane.
- 15 13) The apparatus of claim 12 wherein the fluid conveyance is a water conveyance.
- 14) The apparatus of claim 12 wherein the fluid within the membrane is provided from an upper containment into an opening at the top of the membrane.
- 20 15) The apparatus of claim 14 wherein the opening includes one or more orifices into the membrane.

16) The apparatus of claim 15 further comprising an upper plate attached to the top of the membrane and wherein the one or more orifices are located in the plate.

17) The apparatus of claim 16 wherein the containment is a concrete or pipe
5 containment.

18) The apparatus of claim 12 further comprising:

a) a fluid containment above the membrane for providing the fluid within the membrane; and

b) a float-operated valve within the containment for automatically maintaining
10 fluid within the containment at a preset depth.

19) The apparatus of claim 15 further comprising:

a) a fluid containment above the membrane for providing the fluid within the membrane; and

b) a float-operated valve within the containment for automatically maintaining
15 fluid within the containment at a preset depth.

20) The apparatus of claim 19 further comprising a fixed orifice between the membrane and the conveyance that provides a constant drain of a volume of fluid through the conveyance.

21) The apparatus of claim 12 further comprising a fixed orifice between the
20 membrane and the conveyance that provides a constant drain of a volume of fluid through the conveyance.

- 22) The apparatus of claim 14 wherein the upper containment includes an overflow for fluid provided to the membrane to exit the containment at the fluid level of the overflow.
- 23) A method for controlling the flow of fluid through a conveyance comprising
5 providing fluid against a flexible membrane of a valve positioned in the conveyance to expand the membrane and restrict the flow of fluid through the conveyance with the valve.
- 24) The method of claim 23 further comprising automatically detecting the fluid elevation level of fluid provided against the flexible membrane and
10 automatically re-adjusting the fluid elevation level to a preset level.
- 25) The method of claim 24 further comprising setting the preset level based on the elevation level of an upstream point providing fluid in the conveyance.
- 26) A fluid control apparatus comprising a valve with a flexible portion, wherein the valve is positioned in a fluid conveyance so that the flow of fluid through
15 the conveyance is controlled by the top to down hydrostatic pressure of a fluid against the flexible portion of the valve.
- 27) The fluid apparatus of claim 26 wherein the flexible portion of the valve is positioned for expansion in the conveyance to control the flow of fluid with the flexible portion of the valve.
- 20 28) The fluid apparatus of claim 26 wherein the valve includes a rigid portion connected to the flexible portion for actuation by expansion of the flexible portion so that the rigid portion controls the flow of fluid through the conveyance.